



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/574,264

03/31/2006

Jae Kap Lee

06181/0207506-US0

7194

7278

7590

04/24/2009

DARBY & DARBY P.C.

P.O. BOX 770

Church Street Station

New York, NY 10008-0770

EXAMINER

MILLER, JR, JOSEPH ALBERT

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

04/24/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/574,264	Applicant(s) LEE ET AL.	
	Examiner JOSEPH MILLER JR	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 8 and 9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-9 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Newly submitted claims 8 and 9 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: the claim requires a process of nucleation without CVD film growth, which requires a separate search from formation of a CVD film. Though the originally presented claim required the formation of "particles", the formation was not limited to the formation of individual particles based on nucleation of diamond (the diamond film formed when a matrix is etched away could have been considered a particle in the original claim, but clearly not in the amended claim).

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 8 and 9 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, and 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kley (7,309,446) in view of Linares (2003/0205190).

Kley teaches a diamond shell grown around a form substrate where the substrate may be removed through an opening in the shell (abstract). Kley teaches a "suitably shaped" (abstract) substrate which can be removed after diamond film growth (col 6, lines 41-52) via CVD (col 6, lines 43-57).

Kley teaches attachment of the substrate to a pedestal using "carbon dag" (i.e. paste) prior to the diamond growth process (col 34, lines 3-7). Kley uses the substrate held on a pedestal with paste to "create a diamond shell with an opening corresponding to the shape of the surface of (the) pedestal" (col 34, lines 8-10). The opening used for etching of the substrates is used for and therefore "corresponds to" the zone that is blocked (col 34, lines 14-16).

Kley does not teach nucleation of diamond on the matrix surface by using diamond powders in an ultrasonic bath.

Linares teaches a system and method for producing synthetic diamond (abstract). Linares teaches that it is known to use diamond powder, agitated in an ultrasonic bath in order to enhance nucleation of diamond [0019]. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the method of agitation with diamond powder taught by Linares with the diamond shell formation method taught by Kley because nucleating diamond before CVD would enable the vapor deposition to proceed more quickly.

Since Kley teaches the blocking of sites from CVD film growth, it would be an obvious choice of one applying the method of Linares to that of Kley to block the sites prior to nucleation. Kley clearly uses the blocking material to form a region where the diamond film does not exist (col 34, lines 8-10), therefore one applying the blocking region prior to nucleation, would have the same effect.

Kley states that the diamond layer may be partially formed and then further processed (by coating or implanting) and reseeded prior to continued growth (col 7, lines 10-18, particularly lines 15-18) – it is clear in this embodiment that the 'zones' would be blocked. It is also suggestive that it would be obvious to block the zones prior to the initial seeding (which Kley is silent on).

Regarding claim 2, Kley teaches that the shell may have a major length axis between 20 microns and about 1 meter - thereby teaching on instant range.

Regarding claim 4, the formations are "ball bearings and the like" (col 2, lines 54-57), clearly spherical shapes.

Regarding claim 5, Kley teaches the use of adhesive to attach the substrates to a pedestal, the use of any alternative adhesive, such as "glue tapes" would be obvious to one of ordinary skill in the art.

Regarding claim 6, Kley teaches an embodiment where the resulting surface corresponds to the (100) plane of diamond lattice (col 26, lines 8-10).

Regarding claim 7, Kley teaches a diamond shell (abstract), it is inherent that a shape has a "geometrical shape".

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kley (7,309,446) in view of Linares (2003/0205190) as applied to claim 1 above and in further view of Pope (2004/01992620).

The teachings of Kley in view of Linares are described above.

Kley does not teach coating the surface with vibration.

Pope teaches a method of diamond coating a surface via CVD and that the surface may be vibrated or rotated during the deposition step [0179]. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the vibration as taught by Pope during the diamond CVD process to the diamond coating process of Jones because it would allow for “all desired surfaces” of the object being coated to become exposed [0179].

Response to Arguments

Applicants have overcome claim objections and 112 rejections and 102(b) rejections over Jones by amendment.

Applicant's arguments filed 03/11/2009 over rejections in view of Kley have been fully considered but they are not persuasive.

Regarding applicants arguments over the applicability of Linares to Kley, applicant's argument is over the fact that Linares does not specifically teach “pretreating the matrix... while a zone is blocked”, but examiner holds that it would be obvious to combine the references as described and to apply the blocking step during nucleation.

Regarding applicant's arguments that the current invention predates that of Kley, applicant does not make it clear what date they are claiming for their invention.

After specifying the date, applicants would have to show due diligence. The MPEP describes requirements for Reasonable Diligence in 2138.06. The introduction states: "The diligence of 35 U.S.C. 102(g) relates to reasonable "attorney-diligence" and "engineering-diligence" (Keizer v. Bradley, 270 F.2d 396, 397, 123 USPQ 215, 216 (CCPA 1959)), which does not require that "an inventor or his attorney ... drop all other work and concentrate on the particular invention involved...." Emery v. Ronden, 188 USPQ 264, 268 (Bd. Pat. Inter. 1974)." See 2138.06 for more information.

Regarding applicant's arguments that the current invention predates that of Kley, the affidavit submitted is insufficient to establish a reduction to practice of the invention in this country or a NAFTA or WTO member country prior to the effective date of the Kley reference. Applicants have submitted evidence showing the invention dates back to May 28, 2004, however, Kley is entitled to priority back to March 29, 2004, based on the filing of provisional application 60-557,786, 60-550,571 and 60-547,934.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

Art Unit: 1792

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOSEPH MILLER JR whose telephone number is (571) 270-5825. The examiner can normally be reached Mon - Thurs, 7am to 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks, can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/JOSEPH MILLER JR/
Examiner, Art Unit 1792

/Timothy H Meeks/

Supervisory Patent Examiner, Art Unit 1792